

REMARKS

By this Amendment, claims 1-11 are revised to place this application in immediate condition for allowance. Currently, claims 1-12 are before the Examiner for consideration on their merits.

First, two minor errors are corrected in the specification. In addition, the use of "vapor pressure" has been changed to "pressure" in the specification and claim 3. It is submitted that this revision does not introduce new matter into the specification. When reading the specification and noting that the pressure is indicated as two to six times atmospheric pressure, i.e., .27 to .62 MPa, one of skill in the art would readily understand that the pressure of the steam being discussed is not vapor pressure but the pressure of the steam being used for cleaning. This is further substantiated when viewing the description that the steam is "jetted", see page 9, lines 2 and 25, against the glass body for cleaning. Since vapor pressure is dependent on temperature and the saturation point of the air, one of skill in the art would not confuse the pressure at which the steam is jetted onto the glass rod with vapor pressure, particularly when the pressure is stated as 0.27 to 0.62 MPa. Therefore, this revision to the specification and claim 3 is proper and should be entered.

Minor corrections are also made to claim 7 and 10. Lastly, 2-11 are also revised to better correspond with the changes made to claim 1.

Second, claim 1 is revised to further clarify the invention. Support for characterizing the matrix as cylindrical may be found on page 5, line 16. The

grinding step is described throughout the specification, see page 5, line 21, and page 6, line 1, as examples. Lastly, the use of pressurized steam is clearly supported by the specification and reference to a pressure range of 0.27 to 0.62 MPa.

Turning now to the prior art rejection, the Examiner has rejected claims 1, 4, 6, and 9-12 under 35 U.S.C. § 103(a) based on the combination of United States Patent Nos. 3,275,470 to Charles and 4,175,942 to Lipp, and the admitted prior art.

Claims 2, 3, and 5 stand rejected under 35 U.S.C. § 103(a) based on Lipp, when modified by the admitted prior art and Charles.

Claims 7 and 8 are rejected under 35 U.S.C. § 103(a) based on the combination of Lipp, the admitted prior art, and United States Patent No. 6,715,317 to Bräuer.

Lastly, claim 12 stands rejected under 35 U.S.C. § 103(a) over Lipp.

Applicant respectfully traverses the rejection of the claims and the traverse is set out below under the headings of INVENTION and the various claims being rejected.

INVENTION

In review, the invention relates to an improved method to create glass rods of small diameter. The features of the invention are best seen in claim 1, wherein the cylindrical body has its surface ground, then cleaned with pressurized steam, heated for softening and elongation, and then elongated.

As shown by the comparative example in the specification, practicing the inventive method, particularly the cleaning step, produces a superior glass rod product.

CLAIM 1

Applicant submits that the Examiner has not established a *prima facie* case of obviousness against claim 1 in light of the revisions thereto.

In making the rejection, the Examiner characterizes the state of the prior art as teaching the claimed process except for the applying of steam to the ground surface. The Examiner then turns to the teachings of Lipp to allege that Lipp teaches that the problem of breakage can be eliminated in the process of drawing fiber when steam or water vapor is introduced into the atmosphere surrounding the glass. Given the teachings of Lipp, the Examiner concludes that it would be obvious to apply steam to the surface of the ground glass of the prior art process to minimize breaking during the glass drawing step.

While the rejection also cites the Charles patent, there is no mention of Charles in the reasoning for the rejection. Thus, Applicant assumes that Charles is mistakenly cited to reject claim 1, and will address the rejection based on the admitted prior art and Lipp.

The rejection is flawed since Lipp does not suggest the step involving steam as now recited in claim 1. In review, claim 1 is revised to include the step of applying pressurized steam to the surface of the ground glass for

cleaning. It is respectfully submitted that Lipp does not teach such a step, and lacking any teaching in this regard, Lipp cannot supply the deficiencies in the admitted prior art.

Lipp sets out a method of glass drawing in which a glass in a semi-molten state is drawn in a continuous manner. In this method, it has often been a problem to find an acceptable combination of furnace temperature, drawing tension, and drawing speed. If these are not optimized, breakage of the glass results. The Lipp reference teaches drawing of glass utilizing conventional methods but with the additional provision of means of introducing steam or water vapor into the atmosphere surrounding the glass being formed. The steam or water vapor is used in this reference as part of the atmosphere but not to remove dust from the glass surface after grinding.

There is clearly no step of grinding the surface of the glass and applying pressurized steam to remove the dust from grinding. Since Lipp does not even recognize the step of grinding the surface of the glass, why even employ the steam or water vapor atmosphere after the grinding step of the prior art? There is just no reason to do so absent the use of hindsight.

Also, the rejection fails to take into account that the steam, now pressurized, is applied to the thus ground surface prior to the heating step. In the rejection, the Examiner contends that it would be obvious to apply steam to the drawing step. However, the issue of obviousness relates to the use of pressurized steam to remove the grinding dust, and there is absolutely no teaching or suggestion in Lipp that would lead one of skill in the art to practice

such a step on the process of the admitted prior art. Lipp may suggest permeating the atmosphere with steam but does not teach applying pressurized steam for cleaning.

Lacking any teaching regarding cleaning of dust from a grinding step using pressurized steam, Lipp cannot be relied upon under 35 U.S.C. § 103(a) to establish a *prima facie* case of obviousness in combination with the admitted prior art. Therefore, the rejection of claim 1 fails for this reason.

While Charles is not cited, even if it were, this reference would not supply the deficiencies noted above in Lipp. Charles teaches a method of treating a soda-lime glass body, which comprises providing an atmosphere containing 80-100% saturated steam, maintaining the atmosphere in a temperature range of about 190 to 250°C, and subjecting the body to the atmosphere of a period of about 10-20 minutes. As a result, a corrosion product layer is formed on the surface of the body. The purpose of forming the corrosion product layer is to improve the transverse rupture strength of the body. Charles is totally devoid of any teaching regarding cleaning of a cylindrical glass rod that has been surface ground. As with Lipp, Charles is silent regarding any grinding and is different totally from the invention.

Moreover, even though Charles may employ steam in the process of treating the soda-lime glass body, this process is totally unrelated to the admitted prior art process, and there is no justification for contending that Charles could be relied upon to alter the admitted prior art process.

In light of the above, Applicant contends that the rejection of claim 1 is

in error and must be withdrawn.

CLAIMS 2, 3 and 5

Here, the Examiner admits that Lipp does not teach the features found in claims 2, 3, and 5, and cites Charles to remedy the failings of Lipp. However and regardless of whether the features of claims 2, 3, and 5 may be suggested by Charles, the features of claim 1 are still not taught by either Lipp or Lipp and Charles. Thus, claims 2, 3, and 5 are patentable by reason of their dependency on claim 1.

Moreover, the Examiner's reasoning that the steam conditions of Charles can be applied to the process of claim 1 are in error. In the rejection, the Examiner alleges that one of skill in the art would be led to modify the admitted prior art using the teachings of Lipp and then further modify the teachings of Lipp using the steam conditions of Charles. The use of steam in the drawing furnace of Lipp is for the specific purpose of preventing breakage during drawing. Lipp offers no guidance regarding the steam or water vapor parameters other than to teach that it should permeate the atmosphere, see col. 2, line 27. In contrast, Charles is concerned with forming a corrosion product on a glass body for the purpose of improving the strength of the body. To merely pick temperatures from Charles to satisfy the need to reject claim 2 is pure hindsight. Moreover, the furnace of Lipp is described to be at 900°C. How does this temperature relate to the low temperature processing of Charles? The two are totally unrelated, and the Examiner has no basis to pick

a temperature from the process of Charles and attempt to stuff it into the process of Lipp.

The allegation that the pressure limitations of claim 3 are somehow obvious are also without basis. First, a range of 120-160 °C is not the same as about 190 °C, and Applicant challenges the Examiner to substantiate this contention. Second, the Examiner has no basis to speculate that the atmosphere of Charles would even be used in Lipp, particularly when the purpose of Charles atmosphere is entirely different from Lipp. Consequently, the rejections of claims 2 and 3 are misplaced on the grounds that the Examiner is combining references without any reason to do so.

CLAIMS 7 and 8

The rejection of claims 7 and 8 is also misplaced. Here, the Examiner takes the position that it is only the nozzle structure that is missing from the prior art. This contention misses the fact that there is no suggestion of even applying pressurized steam to the ground rod for cleaning purposes. At best, Lipp permeates the drawing furnace with water vapor or steam to prevent breakage. This does not even imply the presence of apparatus for applying the steam to the surface for cleaning.

Lacking any teaching of an apparatus for the admitted prior art process, Bräuer adds nothing to the rejection. Bräuer is drawn to an apparatus for removing the ovalities in the glass product. However, since Lipp does not even teaching applying pressurized steam for the stated cleaning purposes,

there is no reason to even look to the nozzle arrangement of Bräuer. Thus, the rejection of claims 7 and 8 is misplaced as lacking the appropriate basis to support the combination.

CLAIM 12

In rejecting claim 12, the Examiner has relied upon product by process analysis and contended that either the product of Lipp is the same as the glass rod produced by the method of claim 1, or that any differences are only obvious variations. Put another way, if the Examiner finds a substantially similar product in the prior art, the Examiner is entitled to allege that the product of the prior art is the same as that defined in the product by process claim and shift the burden to Applicant to show otherwise.

In the instant case, the glass rod of Lipp is not the same as the glass rod of claim 12 because the process of claim 1 and that employed by Lipp are entirely different. With Lipp's entirely different process, the Examiner cannot conclude that the product of Lipp is substantially similar to the rod made by the process of claim 1 and shift the burden to Applicant to demonstrate otherwise.

As explained above, Lipp does not teach a grinding step or a step of applying pressurized steam to the ground surface for the purpose of cleaning.

As explained in the Example and Comparative Example on pages 11-14 of the specification, the rod produced according to the invention is not the same as one that was ground but only cleaned with distilled water. Thus, it is also fair

to say that the rod of Lipp that is not even ground would not be the same as one that is ground, and clearly not the same as a ground and steam cleaned one. Thus, there is no basis to conclude that Lipp teaches the rod of claim 12.

In summary, it is submitted that the Examiner has failed to establish a *prima facie* case of obviousness against claims 1, 2, 3, 7, 8, and 12. Lipp does not teach the glass rod of claim 12. Moreover, Lipp and Charles do not teach the step of applying pressurized steam to a ground surface of a cylindrical glass body as now claimed. These references along with Bräuer also fail to teach the features in dependent claims 2, 3, 5, 7, and 8.

Accordingly, the Examiner is requested to consider the arguments made above, and pass all pending claims onto issuance.

If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

The above constitutes a complete response to all issues raised in the Office Action dated December 28, 2006.

Again, reconsideration and allowance of this application is respectfully requested.

A petition for a one month extension of time is made. A check in the amount of \$120.00 is attached herewith. Please charge any fee deficiencies to Deposit Account No. 50-1088.

Respectfully submitted,
CLARK & BRODY

A handwritten signature in cursive script, reading "Christopher W. Brody", written over a horizontal line.

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